

Name Key

Date \_\_\_\_\_

## Ch 8 Test Review

Fill in the correct conic section based on the definition.

1. Circle The set of all points, in a plane, a given distance from a fixed point.2. parabola The set of all points in a plane that are the same distance from a given point and a given line.3. hyperbola The set of all points such that the absolute value of the difference of the distances from a point to two fixed points is a constant.4. ellipse The set of all points such that the sum of the distances from a point to two fixed points is a constant.M is the midpoint of  $\overline{RS}$ . Find the missing coordinates.

5. M( $\frac{1}{2}$ , 6) S(3, 7) R()  
(-2, 5)

6. R(8, 5) S(-5, 2) M( $\frac{3}{2}$ ,  $\frac{7}{2}$ )  
 $\frac{8+(-5)}{2} = \frac{3}{2}$   $\frac{5+2}{2} = \frac{7}{2}$

7. Find the distance between (4, 1) &amp; (1, -3).

$$d = \sqrt{3^2 + (1-(-3))^2} = 5$$

Write the equation of the parabola in graphing/standard form. Then list the vertex, aos, focus, directrix, and endpoints of latus rectum.

$$x-10=y^2-8y+16$$

8.  $x = y^2 - 8y + 10$

9.

10.

11.

$$x+6=(y-4)^2$$

Eq.  $x = (y-4)^2 - 6$

Eq.  $x = \frac{1}{8}(y-2)^2 + 1$

Eq.  $y = \frac{1}{8}(x-4)^2 + 1$

Eq.  $y = \frac{1}{16}(x-2)^2 - 5$

V (-6, 4)

V (1, 2)

V(4, 1)

V (2, -5)

aos  $y = 4$

aos  $y = 2$

aos  $x = 4$

aos  $x = 2$

F  $(-5\frac{3}{4}, 4)$

F(3, 2)

F(4, 3)

F(2, -1)

D:  $x = -6\frac{1}{4}$

D:  $x = -1$

D:  $y = -1$

D:  $y = -9$

Latus Rectum

$(-5\frac{3}{4}, 4\frac{1}{2})$   $(-5\frac{3}{4}, 3\frac{1}{2})$

Latus Rectum

$(3, 6)$   $(3, -2)$

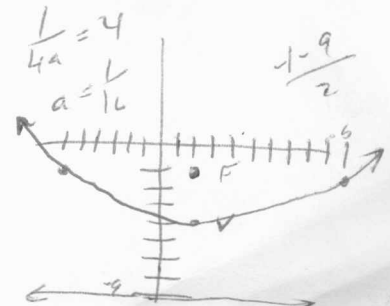
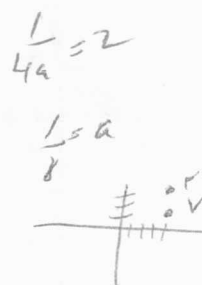
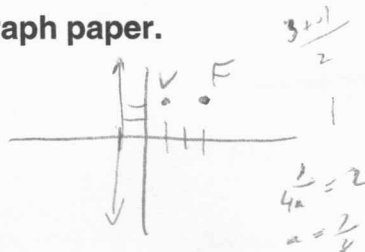
Latus Rectum

$(0, 3)$   $(8, 3)$

Latus Rectum

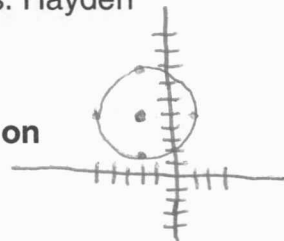
$(10, -1)$   $(-6, -1)$

Graph #11 on graph paper.



12. Write the equation of a circle with C(-2, 5) and a radius of 3. **Graph on graph paper.**

$$(x+2)^2 + (y-5)^2 = 9$$



13. Write the equation of a circle with diameter endpoints at (-2, 1) and (6, 7).

$$C(2, 4)$$

$$(x-2)^2 + (y-4)^2 = r^2$$

$$(6-2)^2 + (7-4)^2$$

$$16 + 9 = 25$$

$$(x-2)^2 + (y-4)^2 = 25$$

14. Write the equation of an ellipse with Foci (2, 0) and (2, 6) and the sum of the focal radii is 8.

$$C(2, 3)$$

$$c=3$$

$$a=4$$

$$16 = a^2 + b^2$$

$$7 = b^2$$

$$\frac{(x-2)^2}{7} + \frac{(y-3)^2}{16} = 1$$

15. Write the equation of the ellipse in graphing/standard form, then list the center, a, b, c, the vertices, and the foci.

$$3x^2 + 2y^2 - 24x + 42 = 0$$

$$\text{Eq. } \frac{(x-4)^2}{2} + \frac{y^2}{3} = 1$$

$$a = \sqrt{3} \quad b = \sqrt{2} \quad c = 1$$

$$C(4, 0)$$

$$V(4, \pm\sqrt{3})$$

$$F(4, \pm 1)$$

$$3x^2 - 24x + 2y^2 = -42$$

$$3(x^2 - 8x + 16) + 2y^2 = -42 + 48$$

$$3(x-4)^2 + 2y^2 = 6$$

$$\frac{(x-4)^2}{2} + \frac{y^2}{3} = 1$$

$$3 = 2 + c^2$$

$$1 = c^2$$

16. Write the equation of the hyperbola in graphing/standard form, then list the center, a, b, c, the vertices, and the foci.

$$9x^2 - 16y^2 - 90x - 64y + 17 = 0$$

$$\text{Eq. } \frac{(x-5)^2}{16} - \frac{(y+2)^2}{9} = 1$$

$$a = 4 \quad b = 3 \quad c = 5$$

$$C(5, -2)$$

$$V(9, -2) \quad (1, -2)$$

$$F(10, -2) \quad (0, -2)$$

$$9x^2 - 90x - 16y^2 - 64y = -17$$

$$9(x^2 - 10x + 25) - 16(y^2 + 4y + 4) = -17 - 225 + 64$$

$$-17$$

$$-64$$

$$144$$

Solve the following systems.

$$17. \quad x^2 + y^2 = 16 + 6y$$

$$x^2 + 6y = 16 - y^2$$

$$x^2 + y^2 - 6y - 16 = 0$$

$$x^2 + y^2 + 6y - 16 = 0$$

$$12y = 0$$

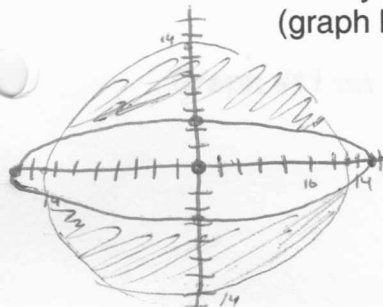
Solve each system by graphing.

$$19. \quad x^2 + y^2 \leq 169 \quad \text{circle}$$

$$x^2 + 9y^2 \geq 225$$

$$(\text{graph by 2's})$$

$$\frac{x^2}{225} + \frac{y^2}{25} \geq 1 \quad \text{ellipse}$$



$$18. \quad x^2 + y = 4$$

$$x^2 + y^2 = 10$$

$$x^2 = 1$$

$$x = \pm 1$$

$$y^2 - y = 6$$

$$y^2 - y - 6 = 0$$

$$(y-3)(y+2)$$

$$x^2 = 6$$

$$x = \pm\sqrt{6}$$

$$(\pm 1, 3)$$

$$(\pm\sqrt{6}, -2)$$

$$20. \quad y \geq (x-2)^2 \quad V(2, 0)$$

$$(x+1)^2 + (y+1)^2 \leq 16$$

$$C(-1, -1)$$

$$(1, 1)$$

$$(3, 1)$$

$$(0, 4)$$

